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MINERALS PROGRAM
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DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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MAR 08 1989
DIVISION OF
OIL, GAS & MINING

March 1, 1989

Mr. R.J. Ramsey
Barney's Canyon Mine
P.O. Box 311
Bingham Canyon, Utah 84006-0311

Re: B.P. Minerals
Barney's Canyon Project
Plan Review Comments

Dear Mr. Ramsey:

We have reviewed the information recently transmitted to our office and have the following comments:

A. The following comments refer to the information contained in your 17 January 1989 transmittal.

1. The following comments refer to the site works specifications:

   a. Section 6.6 on the leak detection system base may be read as that these parameters are verified after excavation to grade and prior to scarification and compaction to construct the leak detection base.

   b. Section 6.8 on clay liner backfill must be consistent with the concept that any variations to the specifications will not justify any reduction in the minimum requirements of the design criteria for the low permeability subgrade.

   c. We understand per our meeting with B.P. Minerals on 28 February 1989 that the gradation test excavations for the clay liner material will include a verticle side wall for observing and evaluating the acceptability of clay remolding.

2. The geotextile and geogrid specifications should provide installation guidance for the geogrid roll joints to insure that geogrid material ends will not puncture the geomembrane.

3. It is noted that the 60 mil HDPE material is warranted by this specification "to resist ultra violet rays for a period of ten (10) years."

4. The following comments refer to the earthwork specifications:

   a. At the request of B.P. Minerals and in consideration of the design work which has been already done for this project utilizing the modified proctor test our requirement that the standard proctor test be used is hereby waived. This is based upon the assurances of Sergent, Hauskins, and Beckwith that adequate remolding of the secondary clay liner will take place.

b. Section 5 specifying the frequency of quality assurance testing for the low permeability subgrade of pad BC-1 must be modified as follows:

i. 70 field density tests total
ii. 70 thickness tests total
iii. 70 grain size distribution tests total
iv. 70 Atterberg limits test total

d. Section 6 specifying the frequency of the quality assurance testing for the leak detection media of pad BC-1 must be modified as follows:

i. 56 field density tests total
ii. 70 thickness verification tests total
iii. 19 grain size distribution tests total

e. Section 7 specifying the frequency of quality assurance testing for the clay liner of pad BC-1 must be modified as follows:

i. 114 field density tests total
ii. 100 thickness verification tests total
iii. 39 grain size distribution tests total
iv. 11 permeability tests total

B. The following comments refer to the information submitted with your 2 February 1989 letter. Only those comments from our 30 January 1989 letter which require additional information or clarification follow:

1. Drawing 1-00-104
We understand that the provisions to protect the flexible membrane from damage due to pump installation and repair will also be used in the pregnant liquor pond.

2. Drawing 2-02-200

a. We understand per phone conversation with Mr. Brian Buck of JBR Consultants on 15 February 1989 the solvents used in the truck shop will be brought on and off site in self contained parts cleaning unit by a responsible supplier.

b. The upgradient monitoring wells are now shown on this drawing. We also would like the locations of section corners and quarter corners on this drawing.

3. Drawing 2-02-201
Detail E shown on drawing 2-02-203 Rev. 1 adequately addresses the concern about ore and leaching solutions being contained on the liner. This detail, however, must be shown typical for all portions of the pad.

4. Drawing 2-06-602
We have reviewed the revised details for the Barren Solution By-pass sump and find them acceptable. Details of the provisions for transferring the catastrophic failure flow from the process building to the sump must be provided for review.

5. Drawing 2-06-606
We understand that a weir approximately 12 feet long with a crest elevation of 5623.5 feet will discharge any catastrophic spills beyond the capability of the process plant sump pumps into the Barren solution sump which is adjacent to the process plant building.

6. Drawing 3-06-600

   a. We understand that the maximum allowable silt depth in the storm water desilting pond will be addressed in the O&M Manual which must be approved prior to the initiation of operations.

   b. The detail of the rock filter shown on drawing 3-06-606 Rev E must show the dimension from top of concrete to top of finish grade.

7. Drawing 3-06-602
We understand that the monitoring of all leak detection sumps will be defined in the O&M Manual which must be approved prior to initiation of operations.

8. Drawing 7-02-201
We have reviewed Sergent, Hauskins and Beckwith's letter No. 13 dated 15 December 1988 and based on the recommendation contained therein will allow 3/4-inch minus material in the process solution collection system.

9. Drawing 7-02-202

   a. We understand that a schedule for monitoring discharge points from the trenches and secondary containment systems for process piping will be included in the O&M Manual. This O&M Manual must be approved prior to initiation of operations.

   b. Details of the heap leach pad sprayer supply line connection to the Barren Solution header pipe on the heap leach pad within 100 feet of the edge must be provided for review.

   c. We understand that details of storm water runoff management from portions of the heap leach pad which have not been loaded with ore will be included in the O&M Manual. The O&M Manual must be approved prior to initiation of operations.

   d. Details of fencing for the pads, ponds, and lined trenches must be submitted for review as described in the 10 February 1988 notice of intent document Section 7.2.

10. Drawing 7-06-609

We understand per our meeting of 17 February 1989 with B.P. Minerals that the chemical storage room 110 in the process building will be used to house dry chemicals which will require no floor drain.

C. The following comments refer to the information presented in reference to B.P. Mineral 4 January 1989 letter.

1. We have reviewed the construction schedule for the entire project. Although it does not comply with our original requirement of substantial continuous construction we allow it based on your reasoning that large capital investments will not remain unused for excessive periods of time.

5. We recommend that piezometers be installed on all pads utilizing the concept shown on drawing 7-02-202, Section A. Perhaps utilizing the cell area adjacent to the cell being leached may work to do observations. Another option is the use of transducers.

6. We believe that the leak detection requirements for this project are minimal considering the location of the project in a highly populated area and the potential to impact the domestic water supply for thousands of residents in the Salt Lake Valley. Be advised that future modifications to the leak detection system, if any, shall provide at least the same degree of assurances for ground water protection as this system is expected to provide.

7. a. At least one sheet of sections which will establish the design height of ore loaded on the heap leach pad must be provided for review.

b. We have the following comments concerning the design criteria included in the Sergent, Hauskins and Beckwith 15 August 1988 letter. The purpose of the comments is to insure a clearer understanding of the professional position taken by Sergent, Hauskins and Beckwith on the Barney's Canyon Project.

i. Per our 28 February 1989 meeting with B.P. Minerals we understand that the compaction and surface preparation requirements for the secondary clay liner of the Barney's Canyon project is adequate to support the 60 mil HDPE flexible membrane to an ore height of 125 feet.

ii. We understand per our 28 February 1989 meeting with B.P. Minerals that all grain size distribution excavations for the clay liner material will include a portion of the side wall being cut verticle for observing and evaluating the acceptability of clay remolding

iii. We understand per our 28 February 1989 meeting with B.P. Minerals that it is Sergent, Hauskins and Beckwith Consultants Professional opinion that the clay liner compacted at or near optimum moisture content will deform plastisity under the 125 foot ore height but not serious impact the 12-inch clay liner thickness or its continuity.

iv. We understand per our meeting with B.P. Minerals on 28 February 1989 that the clay liner quality assurance test results for moisture content after compaction will be within the range indicated in the specifications.

v. On page 3 "to clarify the function of the leak detection system base." The base material must be flat and slope towards the leak detection collection lines to insure that leakage will be rapidly, without ponding, transmitted to the leak detection sumps.

vi. We understand per our 28 February 1989 meeting with B.P. Minerals that it is Sergent, Hauskins and Beckwith Consulting Engineers' professional opinion based upon tests conducted that the fill material beneath Pad BC-1 will adequately support the 125-foot ore body without differential settlement which would compromise the liner systems integrity.

9. The concept presented for storm water runoff management in the desilting pond is acceptable on the condition that; the O&M Manual addresses the procedure for discharging water from the desilting pond to insure adequate capacity.

Please call Mack Croft or Charlie Dietz of my staff if there are any questions.

Sincerely,

Utah Water Pollution Control Committee

Don A. Ostler, P.E.
Executive Secretary

CGD/ag
cc: Ms. Cindy Emmons, B.P. Minerals
Mr. L.J. Jacobsen, Barney's Canyon Gold project
Mr. Brian Buck, JBR Consultants
Mr Kent Miner, Salt Lake City/County Health Department
Mr. Lowell Braxton, Division of Oil, Gas, and Mining
Mr. Ross Pino, 310 East State Highway, Copperton, Utah
Mr. Blaine Milner, Chairman, Copperton Improvement District Copperton
Mr. Steve Harris, Magna area elected council, P.O. Box 455, Magna
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